

Colorimeter Basics

(a simple Beer's Law experiment)

1. Connect the colorimeter and set up an Events With Entry experiment. The Event name will be Concentration in %.
2. Look at the solution to be tested and decide which of the four LED wavelengths should be used: 430 nm (violet), 470 nm (blue), 565 nm (green), and 635 nm (red). Use the < and > buttons to select the wavelength.
3. Notice that the cuvettes have ribbed sides and clear sides. Always hold the cuvette by the ribbed sides and insert the clear sides into the light path of the colorimeter (indicated by the arrow at the back of the cuvette slot). Fill cuvettes about $\frac{3}{4}$ full.
4. Calibrate the device. Insert a cuvette with water (or whatever solvent you are using) into the cuvette slot and close the lid. This will be your blank. Press and hold the CAL button until the red LED starts to flash, then release the button. When the LED stops flashing, calibration is complete.
5. Fill a cuvette with the solution given to you. This will be considered a concentration of 100%. Place in the colorimeter and take a reading.
6. Dilute some of the solution down to 80% (this can easily be done in a 10 ml graduated cylinder). Place in the colorimeter and take a reading.
7. Dilute some of the solution down to 60%. Place in the colorimeter and take a reading.
8. Dilute some of the solution down to 40%. Place in the colorimeter and take a reading.
9. Dilute some of the solution down to 20%. Place in the colorimeter and take a reading.
10. Stop the data collection and run a linear regression curve fit. Record the function.
11. Obtain a sample of the unknown concentration. Return to the **Meter** screen and insert the unknown sample into the colorimeter. When the reading stabilizes, record the value.
12. Tap the **Graph** tab and choose **Interpolate** from the **Analyze** menu. Interpolate along the regression curve to determine the concentration of the unknown. You can tap along the regression line or use the > or < keys.